

**PCT**WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>6</sup>:</b> <b>A61K 7/48, 7/032, 7/027, 7/02, 7/025</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 99/22710</b> <b>(43) International Publication Date:</b> 14 May 1999 (14.05.99)
<b>(21) International Application Number:</b> PCT/US98/22956 <b>(22) International Filing Date:</b> 29 October 1998 (29.10.98) <b>(30) Priority Data:</b> 08/962,100 31 October 1997 (31.10.97) US 08/985,770 5 December 1997 (05.12.97) US <b>(71) Applicant:</b> COLOR ACCESS, INC. [US/US]; 7 Corporate Center Drive, Melville, NY 11747 (US). <b>(72) Inventors:</b> KONIK, Richard, A.; 673 Lincoln Avenue, Sayville, NY 11782 (US). PAINTER, Rachel, J.; 24 Longhorn Lane, E. Setauket, NY 11736 (US). STEP-NIEWSKI, George, J.; 26 Glendale Drive, Melville, NY 11747 (US). DAVIS, Suzanne, J.; 634 Stanton Avenue, Baldwin, NY 11510 (US). <b>(74) Agent:</b> TSEVDOS, Estelle, J.; Kenyon & Kenyon, One Broadway, New York, NY 10004 (US).		<b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
<b>(54) Title:</b> TRANSFER-RESISTANT COLOR COSMETIC COMPOSITION		
<b>(57) Abstract</b>  The invention relates to transfer-resistant color cosmetic compositions comprising a film forming agent, a volatile oil, a styrene-ethylene-propylene copolymer as gellant, and optionally, a pigment.		

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

## TRANSFER RESISTANT COLOR COSMETIC COMPOSITION

Related Applications

5 This application is a continuation-in-part of copending  
US Serial No. 08/962,100, the contents of which are  
incorporated herein by reference in their entirety.

Field of the Invention

10 The invention relates to cosmetic compositions. More  
specifically, the invention relates to waterproof and  
transfer-resistant cosmetic compositions.

Background of the Invention

15 There is currently a very strong trend among cosmetics  
consumers to want products that last the day without the  
need for refreshing or touching up. It is preferred that a  
color cosmetic product applies easily, leaving a clear vivid  
color which remains in place at least through the work day,  
and preferably into the evening. Given the hectic  
lifestyles of most consumers, however, providing such a  
product is not a simple task. Daily physical activity,  
20 particularly in the form of daily exercise, which is now so  
common, is not conducive to makeup retention, with the  
combination of perspiration and body oils routinely washing  
away the typical color products with very little effort. In  
addition, it is also preferred that the product not readily  
25 transfer from the place of application. Consumers no longer  
readily accept a lipstick which leaves its color on a coffee  
cup, or a foundation which leaves smudges on the collar of a  
white blouse. Although many currently available products  
attempt to achieve this desired long-lasting property,  
30 there are often other undesirable properties, such as  
dryness, or difficulty in application, that go along with  
ability to remain in place on the skin. Thus, there  
continues to be a need for a color cosmetic which applies  
smoothly, which is not subject to smearing, flaking, or

smudging, and also retains a strong, non-fading color throughout the day. The present invention now provides such a product.

5     Summary of the Invention

      The present invention relates to a water-proof or water resistant cosmetic composition for application to the skin comprising a volatile oil solvent, a film-forming agent, and a styrene-ethylene-propylene copolymer as gellant. In a preferred embodiment, the composition also contains a pigment. The unpigmented composition can be used for waterproofing non-waterproof color cosmetics, such as a non-waterproof eyeliner. When pigment-containing, the compositions of the invention can be any type of color cosmetic, for example, foundations, blushes, lipsticks or glosses, mascaras for hair and lashes, eyeshadows and eyeliners. The compositions of the invention are waterproof, smudgeproof, non-flaking and when pigmented, transfer-resistant, retaining vibrant color on the skin, with substantially no transfer or fading, for several hours up to a full day.

20     Detailed Description of the Invention

      The compositions of the invention have a volatile oil base, which provides for a very quick-drying product, which in turn reduces the tendency to smear. Suitable volatile oils for use in the composition include, but are not limited to, both cyclic and linear silicones, such as hexamethylcyclotrisiloxane, octamethylcyclotetrasiloxane, and decamethylcyclopentasiloxane; or straight or branched chain hydrocarbons having from 8-20 carbon atoms, such as decane, dodecane, tridecane, tetradecane, and C8-20 isoparaffins. Preferred volatile oils are a C8-9 isoparaffin, such as is commercially available from Exxon Corporation, as Isopar E<sup>®</sup>, or a C<sub>9</sub>-C<sub>12</sub> aliphatic hydrocarbon,

such as is commercially available under the tradename Permethyl®99A, from Permethyl Corp., Frazer, Pennsylvania), or a combination of these. The volatile oil component constitutes from about 1-90%, preferably about 50-85%, by weight of the total composition.

Combined with the volatile oil is at least one film-forming agent, which provides a waterproofing property to the composition, improving the wear of the composition, and also conferring transfer-resistance to the makeup product. The film-forming agent may be any which is cosmetically acceptable. Examples of useful film-forming agents include natural waxes, polymers such as polyethylene polymers, and copolymers of PVP, ethylene vinyl acetate, dimethicone gum, and resins, such as shellac, polyterpenes, and various silicone resins, e.g., trimethylsiloxysilicate. The film-former is used in an amount of from about .1-50%, more preferably from about 1-20%. Particularly preferred film-formers are PVP copolymers, such as PVP/eicosane copolymer or a tricontanyl PVP, which produce a smooth, non-tacky film on the skin. Such copolymers are commercially available under the tradename Ganex® from GAF.

In order to incorporate pigment into the volatile oil-film-former combination, it is necessary to add a gellant; in the absence of a gellant, the pigment will simply fall out of suspension. In this type of formula, the most commonly used gellants are clay-based gellants, such as bentone, which when used as the sole gellant, may not always produce a clear gel. Moreover, the use of clay-based gellants like bentone as the sole gellant, depending on the film-forming agent employed, can result in a product which is unstable, allowing leakage of solvents and emollients from the gel matrix. To avoid these problems, a styrene-ethylene-polypropylene copolymer is used as gellant. The use of a styrene-ethylene-polypropylene copolymer as gellant

results in a very translucent, non-cloudy, shiny product which permits the true color of the pigment to come through. The pigment readily remains in suspension, and the product so prepared also retains stability over prolonged periods of time, thereby producing a superior product to one in which a clay-based solvent is used. In addition, even in the absence of a pigment, a desirable viscosity enhancement is achieved by the use of the copolymer.

The copolymer gellants of the invention are particulate diblock copolymers having the formula S-EP, wherein "S" denotes a block comprising styrene monomers and "EP" denotes a block comprising ethylene and propylene monomers. These materials are well known in the art, and are available commercially, for example, from Shell Chemical Company, Oak Brook, Illinois under the tradename "Kraton® G rubber". A particularly preferred material is Kraton® G-1701X. The amount of the gellant used in the formulation is from about 1-15%, more preferably 3-8% by weight of the total composition.

In a preferred embodiment, the composition contains less than 5%, and preferably none, of a non-volatile oil component. The use of a non-volatile oil can cause plasticizing of the film-forming agent, thereby reducing the product's resistance to smudging. The absence of a non-volatile oil thus results in a product with greater wear. With the use of a pliable film-former such as Ganex®, a non-volatile oil is unnecessary to soften it; however, if a harder, or more brittle, film-former is used, a small amount of non-volatile oil may be necessary to achieve the desired consistency of the product.

Additional preferred components of the cosmetic compositions of the invention include one or more pigments. Any cosmetically acceptable pigment, either organic, inorganic, or combinations thereof, can be used in the

makeup compositions of the invention. Examples of useful inorganic pigments include iron oxides (yellow, red, brown or black), ferric ammonium ferrocyanide (blue), manganese violet, ultramarine blue, chrome oxide (green), talc, lecithin modified talc, zeolite, kaolin, lecithin modified kaolin, titanium dioxide (white) and mixtures thereof. Other useful pigments are pearlants such as mica, bismuth oxychloride and treated micas, such as titanated micas and lecithin modified micas.

The organic pigments include natural colorants and synthetic monomeric and polymeric colorants. Exemplary are phthalocyanine blue and green pigment, diarylide yellow and orange pigments, and azo-type red and yellow pigments such as toluidine red, litho red, naphthol red and brown pigments. Also useful are lakes, which are pigments formed by the precipitation and absorption of organic dyes on an insoluble base, such as alumina, barium, or calcium hydrates. Particularly preferred lakes are primary FD&C or D&C Lakes and blends thereof.

It will be recognized that when the product is, for example, an eyeliner or other eye product, the pigment should be one the use of which is approved for the eye area. Examples of useful pigments for the eye are metallic oxides, such as titanium or iron oxides, bismuth oxychloride, carmine, chromium oxide or chromium hydroxide greens, ultramarines, ferric ferrocyanide, ferric ammonium ferrocyanide, mica, FD&C blue No. 1, FD&C Red No. 40, FD&C yellow No. 5, and FD&C green No. 5. Pigment concentrations will vary depending upon the color of the final product, but generally will be in the range of from about 0.1 to about 30% more preferably from about 1 to about 20%, by weight of the total composition.

The compositions of the invention may also comprise additional, optional components. For example, it may be

desirable to add one or more preservatives or antioxidants to the formulation. Appropriate preservatives may include propyl paraben, butyl paraben, mixtures thereof, or isoforms thereof, as well as BHA or BHT.

5           In particularly preferred embodiments, the compositions of the invention are used as a liquid eyeliner, or as a body paint. In the latter embodiment, the composition can be used to create long-lasting, yet temporary, tattoos or designs on the skin.

10           The invention is further illustrated by the following non-limiting examples:

#### EXAMPLES

15   Example I:

A formulation according to the invention is prepared as follows:

	<u>Material</u>	<u>Weight %</u>
20	<u>Phase 1</u>	
	C8-9 isoparaffin	64.85
	<u>Phase 2</u>	
	styrene-ethylene-propylene copolymer	5.00
25	trimethylsiloxysilicate	5.00
	PVP/eicosene copolymer	5.00
	tricontanyl PVP	5.00
	polyethylene	5.00
	isododecane/quaternium-18 hectorite	0.10
30	BHT	0.10
	<u>Phase 3</u>	
	iron oxides/methicone	10.00

The Phase 2 components are dissolved in Phase 1



component at about 90°C, and mixed to homogeneity. Phase 3 components are then added to the mixture until homogeneously dispersed.

5       The product so prepared is stable, waterproof, and highly resistant to smudging.

What we claim is:

1. A waterproof or water resistant cosmetic compositions comprising a styrene-ethylene-propylene copolymer as gellant, a film forming agent, and a volatile oil.
2. The composition of claim 1 which also comprises a pigment.
3. The composition of claim 1 in which the film-forming agent is selected from the group consisting of natural waxes, polyethylene polymers, PVP copolymers, ethylene vinyl acetate, dimethicone gum, shellac, polyterpenes, and  
5 silicone resins.
4. The composition of claim 1 in which the film-forming agent is a PVP copolymer.
5. The composition of claim 4 in which the film-forming agent is a PVP/eicosene copolymer, a tricontanyl PVP copolymer, or a mixture thereof.
6. The composition of claim 1 in which the volatile oil is selected from the group consisting of cyclic and linear silicones, straight or branched chain hydrocarbons having from 8-20 carbon atoms, and C8-20 isoparaffins.
7. The composition of claim 1 in which the volatile oil is a C8-9 isoparaffin.
8. The composition of claim 1 in which the styrene-ethylene-propylene copolymer is present in an amount of from about 1 to about 15%.

9. The composition of claim 1 in which the film-forming agent is present in an amount of from about .1 to about 50%.

10. The composition of claim 1 in which the volatile oil is present in an amount of from about 1 to about 90%.

11. The composition of claim 1 comprising a styrene-ethylene-propylene copolymer in an amount of from about 1 to about 15%, a PVP copolymer in an amount of from about .1 to about 50%, and a volatile oil in an amount of from about 1  
5 to about 90%.

12. The composition of claim 1 comprising a styrene-ethylene-propylene copolymer in an amount of from about 1 to about 15%, a PVP copolymer in an amount of from about .1 to about 50%, a volatile oil in an amount of from about 1 to  
5 about 90%, and a pigment in an amount of from about 1 to about 30%.

13. The composition of claim 1 comprising a styrene-ethylene-propylene copolymer in an amount of from about 5 to about 10%, a PVP copolymer in an amount of from about 1 to about 20%, and a volatile oil in an amount of from about 50  
5 to about 85%, and a metallic oxide pigment in an amount of from about 1 to about 30%.

14. The composition of claim 11 in which the volatile oil is a C8-9 isoparaffin, a C<sub>9</sub>-C<sub>12</sub> aliphatic hydrocarbon, or a combination thereof.

15. The composition of claim 12 in which the volatile oil is a C8-9 isoparaffin, a C<sub>9</sub>-C<sub>12</sub> aliphatic hydrocarbon, or a combination thereof.

16. The composition of claim 13 in which the volatile oil is a C8-9 isoparaffin, a C<sub>9</sub>-C<sub>12</sub> aliphatic hydrocarbon, or a combination thereof.
17. The composition of claim 11 which comprises less than 5% of a non-volatile oil.
18. The composition of claim 12 which comprises less than 5% of a non-volatile oil.
19. The composition of claim 13 which comprises substantially no non-volatile oil.
20. The composition of claim 11 which comprises substantially no non-volatile oil.
21. The composition of claim 12 which comprises substantially no non-volatile oil.
22. The composition of claim 13 which comprises substantially no non-volatile oil.
23. A waterproof or water resistant cosmetic compositions which comprises a styrene-ethylene-propylene copolymer in an amount of from about 5 to about 10%, a combination of a PVP/eicosene copolymer and a tricontanyl PVP copolymer in an amount of from about 1 to about 20%, a C8-9 isoparaffin, a C<sub>9</sub>-C<sub>12</sub> aliphatic hydrocarbon, or a combination thereof, in an amount of from about 50 to about 85%.
24. The composition of claim 23 which also comprises a pigment in an amount of from about 1 to about 30%.
25. A waterproof or water resistant cosmetic composition

5 which comprises a styrene-ethylene-propylene copolymer in an amount of from about 5 to about 10%, a combination of a PVP/eicosene copolymer and a tricontanyl PVP copolymer in an amount of from about 1 to about 20%, a C8-9 isoparaffin, a C<sub>9</sub>-C<sub>12</sub> aliphatic hydrocarbon, or a combination thereof, in an amount of from about 50 to about 85%, and a metallic oxide pigment in an amount of from about 1 to about 30%.

26. The composition of claim 23 which also comprises at least one other film-forming agent, in an amount of from about 1-10%.

27. The composition of claim 25 which also comprises at least one other film-forming agent, in an amount of from about 1-10%.

28. The composition of claim 26 which comprises at least one film-former selected from the group consisting of polyethylene and trimethylsiloxysilicate.

29. The composition of claim 27 which comprises at least one film-forming agent selected from the group consisting of polyethylene and trimethylsiloxysilicate.

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 98/22956

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 6 A61K7/48 A61K7/032 A61K7/027 A61K7/02 A61K7/025

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 94 12190 A (PENNZOIL PROD CO) 9 June 1994 see page 9 - line 16 see page 12, line 27 - line 33 see page 14, line 4 - line 13 see page 16; table 1 see page 19, line 3 - line 9 ---	1-3,6-10
Y	WO 92 19215 A (PROCTER & GAMBLE) 12 November 1992 cited in the application see the whole document ---	1-3,6-10
Y	US 5 389 363 A (SNYDER FLORENCE ET AL) 14 February 1995 see the whole document ---	1-29
	-/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

23 February 1999

Date of mailing of the international search report

03/03/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
 NL - 2280 HV Rijswijk  
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
 Fax: (+31-70) 340-3016

Authorized officer

Pelli Wablat, B

# INTERNATIONAL SEARCH REPORT

Inter. Application No  
PCT/US 98/22956

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 97 29842 A (PENNZOIL PROD CO) 21 August 1997 see page 3, line 1 see page 3, line 24 - line 31 see page 6, line 26 - line 27 see page 6, line 33 - line 35 see claims 1-7 ---	1-29
Y	EP 0 497 144 A (ESTEE LAUDER INC) 5 August 1992 cited in the application see page 2, line 33 - line 36 see page 2, line 43 - line 58 see claims 1,2,5,9,10 ---	1-17
Y	US 5 026 540 A (DIXON RICHARD P ET AL) 25 June 1991 see abstract see column 2, line 22 - line 68 see column 3, line 16 - line 20 see claims 1,2,4,6 ---	1-17
A	WO 94 17775 A (ESTEE LAUDER INC) 18 August 1994 see page 7, line 4 - line 17 see page 8, line 24 - line 28 see examples ---	1-5,7-19
P,X	WO 98 42298 A (AVON PROD INC) 1 October 1998 see the whole document -----	1-3,6-10

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 98/22956

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9412190 A	09-06-1994	CA 2128423 A DE 626855 T EP 0626855 A GR 95300037 T JP 7504441 T	09-06-1994 03-08-1995 07-12-1994 30-06-1995 18-05-1995
WO 9219215 A	12-11-1992	AU 2002592 A MX 9201926 A	21-12-1992 01-11-1992
US 5389363 A	14-02-1995	NONE	
WO 9729842 A	21-08-1997	AU 2120597 A EP 0885060 A	02-09-1997 23-12-1998
EP 0497144 A	05-08-1992	CA 2059379 A DE 69204697 D DE 69204697 T JP 4295417 A	17-07-1992 19-10-1995 22-02-1996 20-10-1992
US 5026540 A	25-06-1991	NONE	
WO 9417775 A	18-08-1994	US 5356627 A AU 682679 B AU 6100394 A CA 2155184 A EP 0681463 A JP 8506342 T	18-10-1994 16-10-1997 29-08-1994 18-08-1994 15-11-1995 09-07-1996
WO 9842298 A	01-10-1998	AU 6548798 A	20-10-1998